ITS Projects in FY 2006

NTIA S&E Projects

Audio Quality Research
Develop and evaluate new techniques for estimating perceived speech quality. Combine, generalize, and extend recent advances. Further develop robust, scalable, speech and audio coding algorithms.
Project Leader: Stephen D. Voran (303) 497-3839
e-mail svoran@its.bldrdoc.gov

Broadband Wireless Research
Continue development of state-of-the-art measurement systems for collecting broadband radio-wave propagation data. Provide measurement tools and propagation data used for simulation of the spectral efficiency of proposed communication systems.
Project Leader: Peter B. Papazian (303) 497-5369
e-mail ppapazian@its.bldrdoc.gov

Broadband Wireless Standards
Develop technical means to improve predictions of signal coverage and interference for 3G wireless services through support to ITU-R and TIA TR-8 (Project 25). Develop enhancements and/or refinements to propagation-related models. Evaluate and make recommendations for spectrum optimization techniques for NTIA, FCC, and ITU-R.
Project Leader: Paul M. McKenna (303) 497-3474
e-mail pmckenna@its.bldrdoc.gov

Effects of Radio Channel on Receivers
Study the effects of the radio channel on receiver performance. Describe the process of estimating signal characterization and calculate corresponding uncertainties. Simulate ultrawideband signals.
Project Leader: Robert J. Achatz (303) 497-3498
e-mail rachatz@its.bldrdoc.gov

Network Interoperability
Develop and document interoperable architectures. Participate in Project 25/TIA TR-8 and other organizations (e.g., VQEG). Enhance the laboratory to include end-to-end interoperability measurement capabilities across various application scenarios. Investigate multimedia applications and research establishing baseline interoperability for multimedia applications.
Project Leader: Jeffrey R. Bratcher (303) 497-4610
e-mail jbratcher@its.bldrdoc.gov

Network Performance
Provide objective, expert leadership and key technical contributions in ITU-T and related U.S. industry committees responsible for developing broadband network performance, Quality of Service (QoS), and resource management standards.
Project Leader: Neal B. Seitz (303) 497-3106
e-mail nseitz@its.bldrdoc.gov

Networking Technology
Develop networking technology methodologies and tools to address network management and network security/protection issues. Research, develop, and demonstrate state-of-the-art methods and tools related to the measurement of wireless data networks, such as wireless local area networks (WLANs).
Project Leader: David J. Atkinson (303) 497-5281
e-mail dj@its.bldrdoc.gov

Policy Support
Provide engineering and technical support to NTIA in telecommunications policy development.
Project Leader: Alan W. Vincent (303) 497-3500
e-mail avincent@its.bldrdoc.gov

RSMS Enhancements
Develop and maintain software, hardware, systems, and equipment for FY 2006 operations tasks.
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

RSMS 4th Generation Development
Provide new and innovative measurement tools for RSMS capabilities. Continue to develop and document the architectural design of the core software. Add additional instrument modules to the collection of Dynamic Link Libraries (DLLs).
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

RSMS Operations
Provide NTIA with critical measurement support to determine radio spectrum usage across the U.S.; resolve interference problems involving Government radio systems; and determine the emission characteristics of radio transmitter systems that may affect Government operations.
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

Table Mountain Modernization
Ensure a safe working environment at the Table Mountain Field Site, maintain and upgrade the site infrastructure, and provide support for research activities ongoing at ITS.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Table Mountain Research
Utilize the Table Mountain Field Site and Radio Quiet Zone to support fundamental research into the nature, interaction, and evaluation of telecommunication devices, systems, and services that will expand the ITS knowledge base, help identify emerging technologies, and develop new measurement methods.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Third Generation Wireless Interference Modeling and Characterization
Present technical contributions on PCS interference effects to ATIS Technical Subcommittee WTSC/G3GRA. Contribute to related fora (e.g., ITU-R TG 8/1, SG 3M) as appropriate. Develop a technology-independent, multi-channel PCS interference model for use in the evaluation of PCS and other potentially affected (e.g., public safety) systems.
Project Leader: Timothy J. Riley (303) 497-5735
e-mail triley@its.bldrdoc.gov

Video Quality Research
Develop technology for assessing the performance of digital video transmission systems. Create improvements to the existing video quality metric (VQM) software tools. Develop multimedia definition (MD) and high definition (HD) video quality measurement algorithms and software. Transfer this technology to other Government agencies, end-users, standards bodies, and the U.S. telecommunications industry.
Project Leader: Stephen Wolf (303) 497-3771
e-mail swolf@its.bldrdoc.gov

NTIA/OSM Projects

Antenna Polarization Measurements
Provide guidance on the antenna polarization mismatch loss to be used in analyses to determine EMC between antennas using the same radiocommunication service or different services. Perform measurements to determine the loss as a function of various misalignment angles between various antennas.
Project Leader: Brent L. Bedford (303) 497-5288
e-mail bbedford@its.bldrdoc.gov

Effects of Receiver Signal Processing
Determine the feasibility of using a commercially available computer capability to simulate the signal processing for a range of different error correction schemes. Supplement this effort by a literature search to identify theoretical and/or measured results of receiver performance involving signal processing in the presence of interference.
Project Leader: Robert J. Achatz (303) 497-3498
e-mail rachatz@its.bldrdoc.gov

Extent of Frequency Range to Consider in EMC Analysis
Develop and document guidelines for determining the extent of the frequency range that should be considered in assessing potential interference to victim receivers, in order to simplify the electromagnetic compatibility (EMC) analysis between different radio services, and make them more consistent.
Project Leader: John J. Lemmon (303) 497-3414
e-mail jlemmon@its.bldrdoc.gov

LMR Channel Occupancy Measurements
Conduct land mobile radio (LMR) channel occupancy measurements in the Denver area, in order to investigate the current general state of crowding in the Federal and non-Federal LMR bands, and to test the current system. These measurements will provide occupancy data for federal and non-federal LMR bands 30-50 MHz, 138-174 MHz, 406-420 MHz, 450-470 MHz, 764-806 MHz, 806-896 MHz, 896-901 MHz and 935-940 MHz.
Project Leader: J. Randy Hoffman (303) 497-3582
e-mail rhoffman@its.bldrdoc.gov

Characterization of Low Noise Amplifiers
Characterize the response of low noise amplifiers (LNAs) to single and multiple interfering signals. Measure LNAs from several manufacturers to gain insight into the effects of manufacturer design choices on LNA performance.
Project Leader: Yeh Lo (303) 497-3393
e-mail ylo@its.bldrdoc.gov

Radar Spectrum Efficiency, Interference Results, and ITU-R Support
Complete NTIA Report on the effects of interference in radar receivers; complete NTIA Report on radar spectrum efficiency; and provide support to the U.S. Administration in ITU-R through attendance, hosting, and leadership at meetings of the ITU-R JRG 1A-1C-8B, the RCG, and WP-8B.
Project Leader: Frank H. Sanders (303) 497-7600
e-mail fsanders@its.bldrdoc.gov

Short-Range Mobile-to-Mobile Propagation
Develop new approaches to accurately model propagation loss in a mobile-to-mobile (MTOM) environment. Perform an initial radio-wave propagation measurement program to validate and refine the MTOM propagation models.
Project Leader: Paul M. McKenna (303) 497-3474
e-mail pmckenna@its.bldrdoc.gov

Spectrum Efficiency Concepts for Fixed and Satellite Services
Perform initial studies to determine the spectrum efficiency of both the Federal fixed and satellite (mobile and fixed) services. Analyze and discuss various parameters and tradeoffs that must be considered in such studies. Develop spectrum efficiency metrics for the fixed and satellite services.
Project Leader: Robert J. Matheson (303) 497-3293
e-mail rmatheson@its.bldrdoc.gov

Other Agency Projects

Department of Commerce / National Institute of Standards and Technology EEEL / Office of Law Enforcement Standards

Standardization to Facilitate Wireless Telecommunications Interoperability for the SAFECOM Program
Provide engineering support, scientific analysis, technical liaison, and test design and implementation to allow the identification/development and validation of interoperability standards for the justice/public safety/homeland security community. Provide technical assessments and evaluations of commercial products and services that may provide interim solutions for various interoperability scenarios.
Project Leader: Jeffrey R. Bratcher (303) 497-4610
e-mail jbratcher@its.bldrdoc.gov

PSAF Data Model Development and Validation
Develop and coordinate the Public Safety Architecture Framework (PSAF) product, data model, and tool for SAFECOM. Finish the preliminary data model and the PSAF tool; plan and conduct a trial of the data model; develop a Users' Manual; determine hosting requirements of the PSAF tool; and specify the parameters of a secure national repository of architecture descriptions and its required operation.
Project Leader: Christopher Redding (303) 497-3104
e-mail credding@its.bldrdoc.gov

Public Safety Video Quality Testing
Develop and conduct a series of video quality tests to assist public safety agencies with telecommunications systems and equipment selections. Gather information on these video technologies and applications relevant to, and useful in, the SAFECOM applications in NS/EP environments.
Project Leader: Carolyn Ford (303) 497-3728
e-mail cford@its.bldrdoc.gov

Department of Commerce / National Oceanic and Atmospheric Administration / NWS Radar Operations Center

NWS Radar Compatibility Study
Characterize the emissions of an FAA ASR-11 air surveillance radar and trace its signal into and through the front-end of an NWS NEXRAD WSR-88D weather radar receiver. Determine the cause of interference. Offer technical solutions.
Project Leader: Frank H. Sanders (303) 497-7600
e-mail fsanders@its.bldrdoc.gov

Department of Defense

Enhancements to Communication System Planning Tool (CSPT) for DOD
Enhance the ITS CSPT model through improvements in the setup, operation, processing, and review of analysis results.
Project Leader: Robert O. DeBolt (303) 497-5324
e-mail rdebolt@its.bldrdoc.gov

International Symposium on Advanced Radio Technologies (ISART)
Develop and conduct a symposium that addresses emerging and advanced wireless technologies (http://www.its.bldrdoc.gov/isart/). Gather information on these technologies for the sponsor.
Project Leader: Patricia J. Raush (303) 497-3568
e-mail praush@its.bldrdoc.gov

Department of Homeland Security / Federal Partnership for Interoperable Communications

DHS/FPIC Technical Engineering Support
Provide the technical and operational resources to continue to operate a Project 25 (P25) radio test facility for Federal Government agencies to validate the interoperability of P25 radios. Provide the technical and engineering resources to assist in the development of P25 standards in accordance with

the APCO P25 Interface Committee (APIC) and TIA procedures. Identify conditions advanced by P25 vendors or interested parties that require further engineering analysis by an independent entity.
Project Leader: DJ Atkinson (303) 497-5281
e-mail datkinson@its.bldrdoc.gov

Department of Homeland Security / National Communications System

Emergency Telecommunications Service (ETS) Standards Development
Facilitate the standardization of NS/EP specifications, protocols, and/or mechanisms. Develop and/or verify ETS mechanisms to advance their recommendation/standardization. Use laboratory studies, security analyses, and protocol testing to assist NCS in support of PDD-63 and associated CIP initiatives as they relate to Broadband Cable Television Networks.
Project Leader: Arthur A. Webster (303) 497-3567
e-mail awebster@its.bldrdoc.gov

Federal Highway Administration

ITS EMC for HA-NDGPS
Perform an interference analysis for the High Accuracy Nationwide Differential GPS (HA-NDGPS) System to ensure compatibility with existing systems and sufficient spectrum for the new system. Determine locations and characteristics of other users in the 435–495 kHz band.
Project Leader: Nicholas DeMinco (303) 497-3660
e-mail ndeminco@its.bldrdoc.gov

Federal Railroad Administration

Railroad Telecommunications Study
Continue technical support to the Federal Railroad Administration as it pertains to railroad telecommunications and the activities of the Wireless Communications Task Force (WCTF).
Project Leader: John M. Vanderau (303) 497-3506
e-mail jvanderau@its.bldrdoc.gov

Miscellaneous Federal and Non Federal Agencies

Telecommunications Analysis Services
Develop, maintain, and make available to other Government Agencies and to the public, through user friendly computer programs, a large menu of engineering models, scientific and informative databases, and other useful communication tools.
Project Leader: Robert O. DeBolt (303) 497-5324
e-mail rdebolt@its.bldrdoc.gov

Cooperative Research and Development Agreements (CRADAs)

RF Metrics

A Study of the Use of a New Antenna Pattern Collection Technique for Radar Emissions
Improve the usefulness, efficiency, and effectiveness of an experimental antenna pattern collection technique used in making radio spectrum measurements under the ITU-R M-1177 standard.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

University of Colorado

Ad hoc UAV Ground Network Test Bed
Experiment with communication networks between low-cost small unmanned aerial vehicles similar to model RC airplanes, and ground-based radios.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Lockheed Martin Coherent Technologies

Laser Testing
Use the Table Mountain Field Site for distributed target and hard target laser radar testing, as well as measuring the effects of atmospheric scintillation of the measurement of coherent eye safe laser beams.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Johnson's Jobs

Antenna Testing at the Table Mountain Turntable
Evaluate the performance of an array of HF/VHF monopole antennas mounted on a full-scale model of a UAV. Use the Table Mountain turntable facility to facilitate the measurement of the azimuthal antenna pattern of the combined UAV/antenna system.
Project Leader: J. Wayde Allen (303) 497-5871
e-mail wallen@its.bldrdoc.gov

Spirent Communication

IP-Based Video Quality Measurements
Develop Internet Protocol Audio Video Quality (IP-AVQ) test and measurement products for measuring the quality of new IP-based TV and video telephony services being deployed by service providers.
Project Leader: Stephen Wolf (303) 497-3771
e-mail swolf@its.bldrdoc.gov